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How to freeze a four-inch pipe

IS IT POSSIBLE to freeze a four-in. cast iron, fire hydrant lead pipe, so that the hydrant may be changed?

It can be done, according to Allen Kendall and C. K. Parkhurst of Elkhart, Ind. They froze just such a line in Bremen, Ind. Here's how:

They first installed a corporate stop near the hydrant to determine when freezing was complete. Then insulation was placed beneath the pipe to protect against ground heat. A section of inner tube was then cut to the proper length, split and placed beneath the pipe. Next, dry ice was placed on the tubing and worked up around the pipe. The ends of the tubing were closed around the pipe as well as possible and anchored. The tubing was brought together, leaving a small opening at the top. Since it takes several times as long to freeze pipe without some liquid, about 2.5 gal of gasoline were poured through the opening in the top. Kendall says that the gasoline makes better contact and conducts the heat away.

Freezing was complete in about three hours. The hydrant was removed, a valve installed, and the pipe was thawed with hot water. Flame should never be used to thaw the pipe if gasoline is used as the contact agent. The men also recommend as safety measures that there be adequate ventilation —using fans if possible—since the carbon dioxide from the dry ice can smother a workman; and to be sure that the freezing is complete since a trickle of warmer water through the ice will soon become a gusher.

Another engineering tool: Computerized sewerage planning

How would you like to analyze a 60 square mile sewerage system in less than one-half minute of computer time?

The City of Thousand Oaks, Calif., has that ability, three engineers revealed at the recent annual WPCF meeting.

Robert L. White, K. P. Barney, Jr., and A.L. Udin, Enviro-Engineers, Inc., discussed the computerized system for preparation of master plans for wastewater collection and transmission facilities.

The system facilitates convenient updating required for an area characterized by rapid current and anticipated future growth. By changes in computer input cards, engineers can accurately and rapidly assess the effect of a new subdivision or analyze the impact of anticipated developments on existing and/or planned future sewerage systems, they said. The computer program consists of design and cost models which, when used together, produce the preliminary design and cost data required by the sewage master plan. Computer data input includes population, industrial and commercial areas, unit flow factors, sewer design factors, existing system physical representations, peak flows, topography, pipe types, and cost evaluation factors. Computer output includes accumulated peak flow at any given point within the system, line size, and slope, flow velocity, computed peak sewer capacity, and estimated construction cost.

The computerized master plan system has recently been applied to Thousand Oaks, a rapidly growing city 35 miles northwest of Los Angeles. Analysis of alternatives within the Thousand Oaks sewerage system, which ultimately will serve a population between 180,000 and 200,000, is accomplished in less than 30 seconds of computer time. The direct computer cost for evaluation of the system represented by more than 600 separate sewers in less than $40.00.

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Computer monitors Baton Rouge sewers

A COMPUTER is monitoring sewers in Baton Rouge, La. Every 30 seconds the computer "places" a telephone call to part of the city's sewer system. If it likes what it hears it hangs up and places a call to another part of the system. If it doesn't like what it hears, it notifies a human operator that something is wrong and gives him the location.

This "conversation" is said to cut maintenance costs for the city by more than $20,000 yearly.

An IBM System/7 computer, via an automatic telephone dialing device, places calls to telephone units which relay tone patterns generated by sensors attached to 120 unmanned sewerage pumping stations throughout the city. If the tone pattern indicates that a malfunction has occurred, the computer identifies the irregular response and the type of malfunction and delivers a printed message to an operator, telling him precisely what is wrong and at which station.

Ray W. Burgess, public works director for the city says that "previously we had a dozen men riding around in trucks checking these stations for malfunctions. The new system has not only freed these men for more productive work, it does a far more efficient job—on a seven-day, 24-hour basis, at a cost savings of over $1700 per month."

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